

According to the Examiner, Kirt fails to disclose "thermally spraying a layer to the surface of the hollow body." Office Action at 3. In fact, Kirt does not teach or suggest any further processing steps subsequent to reconditioning the cylinder bores using a hand-held electric drill connected to a honing tool. Thus, Kirt is silent regarding the limitation "thermally spraying a layer onto the surface, without prior degreasing or cleaning," as is recited in independent claim 24, and "directly applying a thermally sprayed tribological layer to the surface, without prior degreasing or cleaning" as is recited in independent claims 25-27.

Palazzolo does not cure the deficiencies of Kirt. Palazzolo discloses a method of treating a light metal cylinder bore wall to receive a thermally-sprayed metallic coating. Palazzolo's method comprises:

(a) honing the wall . . . , the honing being carried out with the use of a machining coolant to prevent burnishing of the walls; (b) either concurrently or shortly after step (a), washing the honed surface with a hot alkaline solution comprising (i) a non-soaping aluminate agent that produces a protective residue on the walls, and (ii) surfactants that facilitate wetting of the walls even when some steam bubbles may be present; (c) rinsing the washed surfaces without disturbing said residue; and (d) thermally spraying a metallic bond coat on said honed and washed surface to render a [sic] adhesion between said coating and prepared surface that is at least 2800 psi.

Col. 1, l. 60 through col. 2, l. 8 (emphases added). Thus, any combination of Kirt and Palazzolo would require at least the steps of washing with a cleaning solution after roughening, and rinsing the washed surfaces prior to application of a thermally-sprayed layer. Neither Kirt nor Palazzolo teaches or suggests directly applying a thermally-sprayed tribological layer to the surface of the cylinder bore, without cleaning or degreasing. Thus, it would not have been obvious for one of

ordinary skill in the art to practice the claimed processes in view of the teachings of Kirt and Palazzolo.

The Examiner states that Palazzolo "teach[es] that after the honing/dry-cutting step the interior surface of the hollow body is thermally sprayed with a coat in order to increase the wear resistance and the lubricity of the hollow body." Office Action at 3. By doing so, the Examiner ignores the second part of step (a), above, use of a machining coolant, step (b), above, the washing step, and step (c), above, the rinsing step. Such disregard of the full teachings of a reference is improper. According to the Federal Circuit (emphasis in original):

It is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it as will support a given position to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one skilled in the art.

Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc., 796 F.2d 443, 448, 230

USPQ2d 416 (Fed. Cir. 1986) (warning against taking a portion of a reference out of context and quoting In re Wesslau, 353 F.2d 238, 241, 147 USPQ 391, 393 (CCPA 1965)). The Court vacated the lower court's ruling of obviousness and stated that it "failed to consider the [prior art patent] in its entirety and thereby ignored those portions of the reference that argued against obviousness." Id. Here, the Examiner commits the same error by ignoring, at least, the washing and rinsing steps taught by Palazzolo. The combination Kirt and Palazzolo cannot teach the claimed invention. Withdrawal of the rejection of claims 3, 4, 10, 11, and 24-27 is respectfully requested.

In the Advisory Action mailed September 25, 2002, the Examiner notes that U.S. Patent No. 5,622,753 ("Shepley") and Palazzolo teach the pending claims. The Shepley patent is based on an application filed in 1996 and discloses a method for cutting and preparing a cylindrical bore surface onto which a coating is thermally applied. Prior to application of the coating, the prepared surface has a roughness of from 0.5 to 17mm. While Shepley does not mention the use of a lubricant or cooling lubricant, it fails to teach the special advantage of instant invention, specifically the elimination of a lubricant or cooling lubricant. As such, Shepley does not teach dry cutting without a lubricant and thermally spraying a layer without prior degreasing or cleaning based on silence. Furthermore, at the time of filing in 1996, lubricants and cooling lubricants were state of the art methods. That is, because the state of the art processes utilized lubricants and Shepley is silent on this issue—which is the very improvement disclosed by applicants—Shepley cannot be interpreted to teach the absence of lubricants, degreasing or cleaning. Such an interpretation is not supported by Shepley or the state of the art in 1996.

Palazzolo, which was also based on an application filed in 1996, discloses a method for cutting and preparing a cylindrical surface onto which a coating is thermally applied as discussed above. The surface to be coated is first treated in a cutting manner, in which case, as indicated at column 1, lines 64-65 of Palazzolo, a coolant is used that has the purpose of avoiding heating up the walls. A dry removal of material, as required by our invention, is therefore not taught here. This is evident based on the passage in Palazzolo at column 5, lines 27-28, that indicates

that this liquid is used for washing. The passage pointed out by the Examiner teaches away from the claimed invention and points out the ineffectiveness of such a method. Therefore, Palazzolo fails to teach or suggest dry removal of material as claimed. Additionally, because the use of lubricants was the state of the art at the time this patent was applied for in 1996, lubricants and cooling lubricants were used as disclosed by Palazzolo. Palazzolo cannot anticipate the claimed invention.

In view of the foregoing amendments and remarks, the application is respectfully submitted to be in condition for allowance, and prompt favorable action thereon is earnestly solicited.

If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response; please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket #225/48098).

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MARKED-UP VERSION TO SHOW CHANGES

IN THE CLAIMS

3. (amended) The method of claim 24 [23], wherein the dry cutting is performed by drilling, brushing, knurling, circular milling or combinations thereof.

4. (amended) The method of claim 24 [23], wherein the tool comprises cubic boron nitride, polycrystalline diamond, a coated or uncoated hard metal or a ceramic.

10. (amended) The method of claim 24 [23], wherein the tool is an indexing insert.

11. (amended) The method of claim 24 [23], wherein the tool is fitted with a plurality of indexing inserts.

24 [23]. (amended) A method of making a cylinder bore in an engine block, comprising:

dry cutting an interior of the cylinder bore without a lubricant using a tool having a surface profile, wherein a portion of a material forming the interior is removed and produces a surface having a defined quality or structure; and thermally spraying a layer onto the surface, without prior degreasing or cleaning.

25 [24]. (amended) A process for surface coating an interior side of a cylinder bore, comprising:

removing a portion of material forming the interior side of the cylinder bore to be coated, thereby creating a surface having at least one of a defined structure or quality; and

directly applying a thermally sprayed tribological layer to the surface,
without prior degreasing or cleaning.

wherein the removing comprises dry-cutting without a lubricant in one process step until a roughness value of from 25 to 65 μm is reached, using a cutting tool with a defined surface profile.

26 [25]. (amended) A process for surface coating an interior side of a cylinder bore, comprising:

removing a portion of a material forming the interior side of the cylinder bore to be coated, thereby creating a surface having at least one of a defined structure or quality; and

directly applying a thermally sprayed tribological layer to the surface,
without prior degreasing or cleaning.

wherein the removing comprises dry-cutting without a lubricant in one process step until a roughness value of from 25 to 65 μm is reached, using a cutting tool with an undefined surface profile.

27 [26]. (amended) A process for surface coating an interior side of a cylinder bore, consisting of:

removing a portion of material forming the interior side of the cylinder bore to be coated, thereby creating a surface having at least one of a defined structure or quality; and

directly applying a thermally sprayed tribological layer to the surface,
without prior degreasing or cleaning.

wherein the removing comprises dry-cutting without a lubricant in one process step until a roughness value of from 25 to 65 μm is reached.